9155

Diag. Cht. Nos. 1000-3 & 1229-2

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

DESCRIPTIVE REPORT
(HYDROGRAPHIC)

Type of Survey HYDROGRAPHIC

Field No. MI-40-2-70

Office No. H-9155

LOCALITY

State NORTH CAROLINA

General Locality ATLANTIC OCEAN

Locality OREGON INLET- KILL DEVIL HILLS

19 70

CHIEF OF PARTY
Edwin K. McCaffrey

LIBRARY & ARCHIVES

DATE November 2, 1973

☆ U.S. GOV. PRINTING OFFICE: 1976—669-441

9155

Area - 01
12202 (1229)
12204 (1279)
12200 (1109)
12002

FORM C&GS-537 (5-66)

U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

REGISTER NO. H-9155

INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

FIELD NO. MI-40-2-70

State: North Carolina

General locality: Atlantic Ocean

Locality: Oregon Inlet - Kill Devil Hills

Scale: 1:40,000 Date of survey: Aug.28 to Oct.10, 1970

Instructions dated: Rev.Inst.dated Jul.9,1970
Amend.dated Aug. 7,1970
Amend.dated Aug.27,1970 Project No. OPR-438

Vessel: USC&GS Ship MT MITCHELL (MSS-22)

Chief of party: Edwin K. McCaffrey, CDR, NOAA, Commanding Officer

Surveyed by: Thomas E. Gerish, LT, Tom Gryniewicz, LTJG, Andrew L. Sikes, ENS, Stewart McGee, ENS, Stephen C. Schwartz, ENS, Gregory R. Bass, ENS, Gary M. Adair, ENS, Gary L. Sundin, ENS

Soundings taken by echo sounder, ~~hand lead, pole~~ DE-723B

Graphic record scaled by: Ship Personnel

Graphic record checked by: Ship Personnel

Protracted by: CalComp Plotter Automated plot by: Atlantic Marine Center

Soundings penciled by: Cal Comp Plotter

Soundings in ~~fathoms~~ feet at MLW ~~MLLW~~

REMARKS: Ship personnel scanned the graphic records and entered corrected and insert soundings on the Raw Data printout. The corrected Raw Data printout was used to construct a Smooth Raw Data tape and printout. The Smooth Raw Data printout was proof-read. All records (mylar boatsheet, fathograms, sawtooth records, raw data tapes and printouts, smooth raw data tapes and printouts, plotting abstracts, corrector tapes and printouts and tidal data) were forwarded to Atlantic Marine Center, Attn: CFN3

Applied to ctd 12-4-73 [initials]

Cht
1000
1109
1229
1295c

KWW 8/25/92

USCOMM-DC 37009-P66

PROGRESS SKETCH

OPR-438

North Carolina Marine Charting

Hydrographic Operations

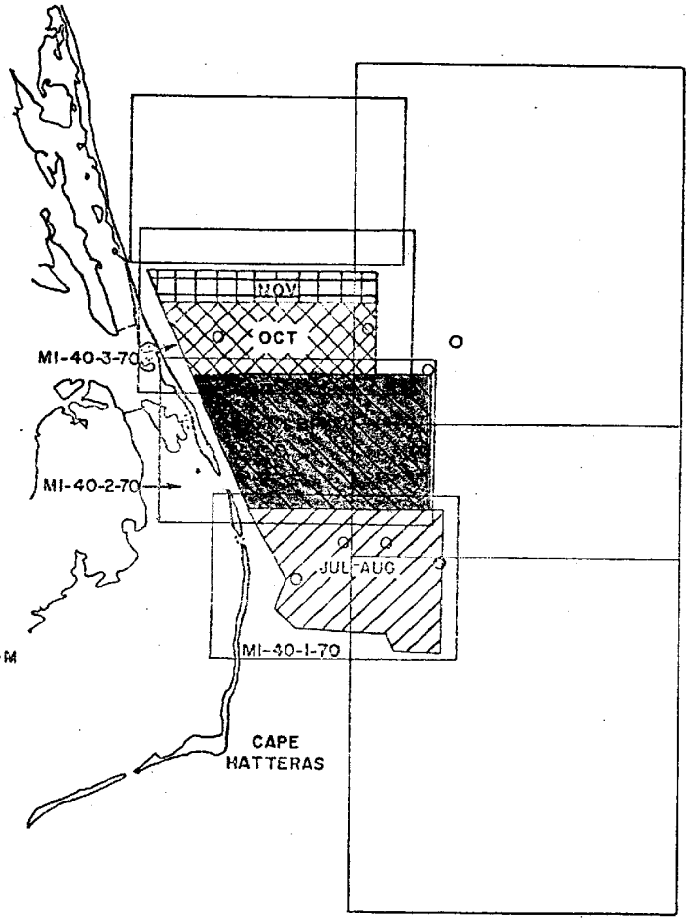
1970

USC&GS Ship MT MITCHELL (MSS-22)

Edwin K. McCaffery, CDR, USESSA, Com'd'g.

Scale of C&GS Chart 1000

JUL.	AUG.	SEP.	OCT.	NOV.	
152	2613	3027	1990	1167	MILES, SOUNDING LINE
320	419	492	461	150	MILES, DISTANCE TO & FROM
724	1266	1067	1576	930	MILES, MISCELLANEOUS
40	56	0	6	29	BOTTOM SAMPLES (GRAB)
1	0	0	0	0	NANSEN CAST
1	4	5	2	2	STD CAST



Descriptive Report

To Accompany

Hydrographic Survey Sheet

MI-40-2-70 (H-9155)

Project OPR-438

1970 Field Season

Scale 1:40,000

USC&GS Ship MT MITCHELL (MSS-22)

Edwin K. McCaffrey, CDR, USESSA

Chief of Party

A. PROJECT

This survey was accomplished under Project OPR-438, North Carolina Marine Charting in accordance with the following instructions:

1. Revised Project Instructions dated July 9, 1970
2. First Amendment to Instructions dated August 7, 1970
3. Amendment to Instructions dated August 27, 1970

B. AREA SURVEYED

This survey was conducted from August 28, 1970 to October 10, 1970.

The area surveyed is off the coast of North Carolina between Oregon Inlet and Kill Devil Hills and extends approximately 25 miles off shore.

The eastern limit of the sheet is the 10 fathom curve adjacent to the shoreline. The western limit is Longitude 75°02'West. The northern limit is Latitude 36°00' North. The southern limit is Latitude 35°44' North.

This survey junctions, along its southern limit, with contemporary survey MI-40-1-70 (H-9137), 1970, Scale 1:40,000. It also junctions, off Oregon Inlet, with prior survey BE-10-1-62, (H-8765), 1962, Scale 1:10,000.

C. SOUNDING VESSEL

This entire survey was conducted by the NOAA Ship MT MITCHELL (MSS-22). The position numbers are denoted in blue.

It might be noted that the position numbers in the southwest corner of the sheet and on the developments are in a different color blue. This was merely a change in ink and does not indicate a change in any of the equipment.

D. SOUNDING EQUIPMENT

All soundings, in this survey, were recorded in feet, to the nearest foot, using a Raytheon Survey Fathometer, Model DE-

723B, Serial Number 1280. The depths encountered by the sounding machine were between a minimum of 24 feet and a maximum of 155 feet.

Sound velocity was determined from STDV casts (STDV Model 9040-4C, Serial Number 5633). The first cast of this project was taken simultaneously with a Nansen cast for comparison. Very good agreement was obtained. A total of 7 casts were taken on this sheet at the rate of one or two per trip in different sections of the sheet to check for possible geographic or seasonal changes in the sound velocity. Two of the casts were taken just offshore from Oregon Inlet to check if the outflow from Pamlico Sound would cause any variation. A thermistor was also towed and monitored continuously while running hydrography to note any temperature anomalies in the area. None were noted.

No seasonal or geographic trends were noted in the casts. So all casts were averaged, graphed, and the final velocity correctors (in 0.5 foot increments) were abstracted. The layer correctors for each cast deviated from the average by less than 0.3 of a foot.

The following are the four general components of the TRA corrector:

1. The initial correction was determined by scanning the fathograms. At no time did the initial vary more than 0.2 of a foot and appears as zero on the corrector abstracts.

2. The instrument corrector was determined to be -1.1 feet by taking a series of ten simultaneous leadline and echo soundings.

3. Settlement and Squat information was collected on October 8, 1969. The correctors are +0.8 feet for Standard Speed and +0.1 feet for Half Speed. A linear interpolation was used for intermediate speeds since the difference is small.

4. Draft correction remained zero for all sheets. The initial was set at 14 feet to compensate for the draft. The draft aft, where the transducer is mounted, remained constant. All supplies and fuel are used from forward and their use

changes only the forward draft.

The components of the TRA corrections were combined and applied to the nearest 0.5 of a foot.

The following checks were made at the offshore end of nearly every line: A-F scale check, MRV, stylus arm length, speed count, paper alignment and initial. A-F scale checks and stylus arm length checks varied from excellent to marginal due to the poor quality of the graphic record paper. No additional errors were incurred however.

Sliver spikes began to appear on the fathograms on October 10. The cause was found to be slippage in the linkage from the drive motor to the stylus arm. Using strobe light test equipment it was found that the stylus arm was losing part of a revolution periodically. As the loss was a portion of a revolution, it never showed in the speed counts until the slippage rate increased causing a speed count of 86. When this occurred the hydrography was rejected. The machine was put to rights prior to resuming hydrography.

E. SMOOTH SHEET

The smooth sheet is presently scheduled to be compiled using the automatic plotting equipment at the Atlantic Marine Center.

Field records were encoded on punched tape with resultant printout, using the "on line" method of operation. These Raw Data tapes and printouts contain information on time, depth, day number, position number and two Hi-Fix readings. Insert and corrected soundings were entered on the Raw Data printout. Smooth Raw Data tapes and printouts were made using the Raw Data printout as source. The Smooth Raw Data printouts were proof-read. The Smooth Raw Data tapes will be used for final compilation. All data was recorded using ASCII code, (Model 33ASR teletype), single indicator format. These parameters were recorded using a manual hydrographic data logger and depth module. All necessary corrector tapes, with printouts, were prepared. Copies of the corrector tape printouts are included in this report.

F. CONTROL

Hi-Fix, operating at a frequency of 1618.650 KHz, was used for control on all operations.

The Hi-Fix stations were located on marks set by Atlantic Marine Center personnel using electronic traverse methods. The northernmost station "SHIP 1970" (Latitude 36°01'27.6" North Longitude 75°39'45.8" West) was designated as P2 and the southern station "WILD 1970" (Latitude 35°41'02.16" North Longitude 75°28'57.2" West) was designated as P1. All regular survey lines were run using P1 arcs and all cross lines and developments were run using P2 arcs.

Hi-Fix was calibrated by laying approximately two miles off shore from Oregon Inlet and taking a three point sextant fix, with check angle, using the following objects of known geographic position: Left Object - Oregon Inlet Coast Guard Station Cupola 1933, Center Object - Corps of Engineers dredging rear range marker, Right Object - Bodie Island Lighthouse 1875, Right Check Object - Bodie Island National Park Service Water Tank 1909. Partial lane correctors and full lane settings were obtained graphically, using the three point fix, from a 1:20,000 scale calibration sheet. The Hi-Fix was calibrated at the start of each cruise and whenever there was a doubt as to correct lane count.

All objects used to obtain a three point fix, with the exception of the rear range marker, are previously located triangulation intersection stations. The rear range marker was located by ship personnel using a tape distance from station "OREGON 1970" and a sextant angle at station "OREGON 1970" between Bodie Island Lighthouse and the rear range marker. The geodetic position was determined to be Latitude 35°47'50.6" North Longitude 75°32'44.1" West.

A position (lane count) was determined for Bodie Island Lighted Bell Buoy "8". This buoy was subsequently used for full lane settings after Hi-Fix problems. The advantages of using the buoy over returning to calibrate (visually) at Oregon Inlet were speed of lane check, availability for use at night, and proximity to working area.

General Hi-Fix operation could be termed fair with most of the down time attributable to electronic trouble and running to and from a calibration point.

A strip chart (sawtooth record) was monitored continuously while Hi-Fix was operating in order to keep accurate count of lane gains and losses. These strip charts were check scanned to be

absolutely sure no errors in lane count occurred.

Fixes were normally taken every four minutes on the sounding lines. The distance between fixes is approximately 1.5 inches on the boatsheet.

Good intersection angles between the Hi-Fix arcs, hence strong fixes, were the rule over most of the sheet. The smallest intersection angle, 20°, is in a small section on the inshore edge of the sheet. *Usable fixes in this area were still obtained.

*Adequate junction made with inshore sheet H-9525

G. SHORELINE

There is no shoreline on this sheet.

H. CROSSLINES

4.4% crosslines (not including any developments) were run with 4.5 mile spacing over the entire sheet. Excellent comparison was noted at all crossings. Good comparisons were also noted between development soundings and regular sounding lines.

The line between Position 2194 and 2203 (Latitude 35°47.3' N. Longitude 75°30.0' W. to Latitude 35°52.0' N. Longitude 75° 32.3' W.) appeared to plot too far to the east. The line also did not plot straight although course and speed were maintained. Since the control is weak in this area, the line fell inside the 60 foot curve (outside the limits of the survey) and there was some doubt about its position, it was rejected.

J. JUNCTIONS

Junction with contemporary survey MI-40-1-70 (H-9137) along the southern edge of this survey was good, with a maximum difference of 2 feet which occurred in depths greater than 120 feet.

The regular sounding lines do not run far enough inshore to junction with BE-10-1-62 (H-8765) 1962, Scale 1:10,000. The proximity of shoal water made adequate junction impractical when running sounding lines with MT MITCHELL. Fair comparison was noted on the two alongshore lines run in this area. The differences that do occur may be explained by the rugged character of the bottom and the historically changeable nature of

the offshore approach to Oregon Inlet.

J. COMPARISON WITH PRIOR SURVEYS

Pre-Survey Review Item #5 is the only specifically mentioned item that falls on this sheet. It is a 59 foot sounding charted at Latitude 35°58'~~12~~13" N. Longitude 75°28'~~18~~16" W. which originates with a chart letter Number 321 of 1967, from the Ship WHITING. The sounding was noted by WHITING while obtaining trackline soundings. Several 59 foot soundings were noted 0.2 mile west of the charted sounding. This is the northernmost end of a shoal that extends southward for 3 miles. The shallowest sounding, (predicted tides only), 49 feet, lies about 2" midway in the shoal (Latitude 35°57.~~3~~5' N. Longitude 75°28.~~6~~4' W.). After final tides and all corrections have been applied, the least depth is 50 feet. (The Position Number nearest to the above mentioned least depth is 4132.

The 16 circled soundings listed on the Pre-Survey Review sheets were investigated and the results are listed below.

Notes - *Least depth in the area
Sounding on boatsheet/final depth (final tides and corrections applied)

-**Distance and direction from charted sounding to newly found least depth

	Lat.	Long.	Depth Charted	Depth Least*	Location** Distance	Location** Az.	Recommendation
#5	35°58.2'	75°28.3'	59	49/50	1.3 N.M.	194° Delete	~~Retain~~ 59' sndg. and chart present depths. ~~on the charts. Outline the feature. Add the 50' sounding~~
1	35°56.4'	75°30.5'	57	57/58	0.4 N.M.	144°	Move sndg. on the charts distance & direction indicated
2	35°53.7'	75°24.0'	55	57/58	0.1 N.M.	000°	~~Retain~~ charted sounding should be deleted.
3	35°54.5'	75°21.6'	49	48/50	0.3 N.M.	111°	Move charted sndg. distance & direction indicated
4	35°55.2'	75°21.5'	49	51/53			Extend this feature as shown on boatsheet

Dec 8, 9, 11

	Lat.	Long.	Depth Charted	Depth Least*	Location** Distance	Location** Az.	Recommendation
5	35°55.2'	75°18.9'	75	66/68	0.5 N.M.	090°	Delete charted sndg. Replace with newly found depth
6	35°54.5'	75°18.0'	66	63/65	0.2 N.M.	315°	Delete charted sndg. Replace with newly found depth
7	35°52.0'	75°17.7'	69	62/64	0.75N.M.	144°	Delete charted sndg. Replace with newly found depth
8	35°50.5'	75°23.4'	66	62/64	0.3 N.M.	098°	Delete charted sndg. Replace with newly found depth
9	35°48.8'	75°22.6'	48	54/56	0.3 N.M.	023°	~~Retain~~ charted sndg. should be deleted.
10	35°48.3'	75°27.2'	37	38/40	0.15N.M.	097°	~~Retain~~ charted sndg. should be deleted.
11	35°46.5'	75°26.8'	28	31/31	0.35N.M.	192°	Delete charted sndg. Replace with newly found depth
12	35°45.5'	75°27.0'	27	31/32	0.45N.M.	262°	Delete charted sndg. Replace with newly found depth delete
13	35°45.0'	75°25.3'	34	34/35	0.40N.M.	100°	~~Move~~ charted sndg.
14	35°44.2'	75°24.2'	36	36/38	0.1 N.M.	115°	~~Retain charted~~ sndg. not charted - disregard
15	35°46.4'	75°21.2'	54	56/58	0.5 N.M.	076°	Delete charted sndg. Replace
				53/54	0.9 N.M.	164°	~~With~~ newly found depth
16	35°46.1'	75°19.3'	55	50/50	1.2 N.M.	198°	Delete charted sndg. Replace with newly found depth

All developments appear on a single mylar overlay sheet. Developments 1 through 14 were run to check pre-survey review soundings.

All least depths from the overlay have been transferred to the boatsheet.

Development 15 was run to further define the shoal in that area. All of these soundings were transferred to the boatsheet.

Development 16 disproved a sliver spike found earlier in the survey. The spike was apparently caused by a school of fish or a random stray as discussed in Section D.

A comparison was made with prior survey H-1050, 1870. Soundings generally agreed only within 6 to 8 feet. Occasional areas in the more offshore sections of the prior survey vary from the new survey by as much as 15 feet. It appears that the control on the prior survey was weak in these areas since these soundings appear slightly displaced in the light of the new survey. Similar features and depths usually appear nearby on the new survey. No other complete prior survey was supplied for comparison.

K. COMPARISON WITH CHART

Comparison was made with C&GS Chart 1229, 15th Edition, dated December 20, 1969, Scale 1:40,000. More extensive shoaling in the area west of Longitude 75°20' W. between Latitudes 35°52' N. and 36°00' N. appears in the new survey. Generally, the charted depths in this area are in the range of 70 feet while many depths between 50 feet and 60 feet are indicated by this survey.

Generally most of the soundings agree within 5 feet of the charted depths and occur within 0.3 mile of the charted position. The general shape and location of charted depth curves, except in the area mentioned in the first paragraph, agree with the boatsheet. Extensive discussion of specific differences is not deemed necessary in view of this general agreement.

No uncharted dangers to navigation appear in the survey.

In the more offshore areas comparison was made with C&GS Chart 1109, 21st Edition, dated June 9, 1969, Scale 1:416,944. The charted 20 fathom depth curve swings from 4 miles west of its actual position at Latitude 35°44' N. to 8 miles west at Latitude 35°48' N. The chart then shows a dog leg in the depth curve that does not now exist. The curve is then charted swinging in a NNW direction while actually the curve moves NNE to the limit of the survey.

The wire-dragged 9 fathom ~~sounding~~ cleared depth which appears at Latitude 35° 53' N. Longitude 75°16.5' W. falls in an area where the shallowest depth is 65 feet. No indication of this obstruction was noted on fathograms in its vicinity. Cleared depth charted in error. The source document (F.E. No. 16 (1957) W.D.) indicates cleared depths of ~~62~~ 58 ft ~~in the area~~. Revise chart accordingly. The chart generally agrees with the survey within 1 fathom in other areas. over a 61-ft sounding just south of above position, and a cleared depth of 62 ft over a 65-ft sounding just northwest of above position.

L. ADEQUACY OF THE SURVEY

This survey is considered complete and adequate to supersede prior surveys for charting.

An eight mile long holiday appears between Latitude 36°00.5' N. Longitude 75°24.0' W. and Latitude 35°57.5' N. Longitude 75°16.0' W. Required line spacing in this area is 200 meters. Due to an error in Hi-Fix control the spacing on this arc is 277 meters. Because of the nature of the bottom it was considered unnecessary to develop the area further.

M. AIDS TO NAVIGATION

Bodie Island Lighted Bell Buoy "8" (Coast Guard Light List Volume I, Page 20, Light List Number 162) located at Latitude 35° 55.8' N. Longitude 75°27.6' W. was found to be in the exact position as listed. The buoy is adequate and is serving its purpose.

No other aids to navigation are located within the limits of this survey nor were any additional aids deemed necessary.

N. STATISTICS

5190 positions
3845 miles sounding lines
422 square miles surveyed
56 bottom samples
7 STDV casts

M. MISCELLANEOUS

The mylar boatsheet had some advantages and some rather important disadvantages compared to muslin backed boatsheets.

The advantages over muslin backed boatsheets are:

1. Transparency aided in comparison with prior surveys and developments.
2. Stable size.
3. Easy to handle.
4. Easy to keep clean.

The disadvantages are:

1. Inked soundings and position numbers rub off rather rapidly.
2. Pencil marks cannot be erased without also erasing inked items.
3. Ink does not flow smoothly onto the sheet, especially in areas that had been previously erased over.

Acetate inks were not suitable for our use in Rapidograph pens, quill points, or ruling pens due to its rapid drying qualities. The pen must be used continuously to keep the ink flowing and that, of course, is impractical. Unless the surface of the mylar sheets is made more acceptable to inks or suitable ink supplied, I suggest the use of mylar for boatsheets be discontinued.

P. RECOMMENDATIONS

Find a solution to the problems encountered when using mylar for a boatsheet.

Q. REFERENCE TO REPORTS

No reports, other than the standard ones, were made on this sheet.

Respectfully Submitted:

for Leonard E Parker LCDR NOAA
Thomas E. Gerish
LT, NOAA

Approved and Forwarded:

Edwin K. McCaffrey
CDR, NOAA
Commanding Officer

APPROVAL SHEET

Field Number MI-40-2-70

Registry Number H-9155

The field work and processing of data from this hydrographic survey was under my immediate daily supervision. The boat-sheet and all records have been reviewed and are approved by me. It is believed this survey is complete and adequate to supersede all prior surveys of the area.

Edwin K. McCaffrey
CDR, NOAA
Commanding Officer

CAM3-2
2-22-71

ATLANTIC MARINE CENTER

ELECTRONIC CONTROL PARAMETERS

1. Project # OPR-438 2. Reg. # H-9155 3. Field # MI-10-2-70

4. Type of Control: _____ (Hi-Fix, ~~Raydist, EPI~~, ~~etc.~~)

5. Frequency 1618.650 (for conversion of electronic lanes to meters)

6. Mode of Operation (check one):

Range-Range [✓] Range-Visual [ ]

Range One (R_1) Station I.D.	WILO 1970	Lat.	35° 41' 08.16"
		Long.	75° 28' 57.20"
Range Two (R_2) Station I.D.	SHIP 1970	Lat.	36° 01' 67.59"
		Long.	75° 39' 45.79"

Hyperbolic (3-station) [ ] Hyper-Visual [ ]

Slave One Station I.D.	_____	Lat.	____° ____' ____"
		Long.	____° ____' ____"
Master Station I.D.	_____	Lat.	____° ____' ____"
		Long.	____° ____' ____"
Slave Two Station I.D.	_____	Lat.	____° ____' ____"
		Long.	____° ____' ____"

7. Location of Survey:

Range-Range [✓] Imagine an observer is standing at R_1 Station and looking directly at R_2 (check one):

Survey area is to observer's Right [✓] A=Ø

Survey area is to observer's Left [ ] A=1

Hyperbolic [ ] Looking from survey area toward Master Station:

Slave One must be to observer's Left;

Slave Two must be to observer's Right.

8. [ ] This form is submitted as an aid in preparing a boat sheet.

[ ] This form applies to all data on this survey.

[ ] This form applies to part of the data on this survey.

Vessel EDP #	From Time	From Day	To Time	To Day	Position Numbers (inclusive)
_____	_____	_____	_____	_____	_____ to _____
_____	_____	_____	_____	_____	_____ to _____
_____	_____	_____	_____	_____	_____ to _____

9. Remarks: _____

FORM # 1 FIG. 15

PARAMETERS FOR DIGITAL COMPUTING
POLYCONIC PROJECTION

(1) PROJECT No. OPR-438
(2) H No. 9155
(3) FIELD No. MI-40-2-70
(4) REQUESTED BY ATLANTIC MARINE CENTER
(5) SHIP OR OFFICE SHIP MT MITCHELL
(6) DATE REQUIRED A.S.A.P.
(7) VISUAL ☐
(8) ELECTRONIC [X] (FILL OUT FORM #3)

(10) XKN (SP 5) DISTANCE FROM CMER TO EAST EDGE (NYX = 1) OR WEST EDGE (NYX = 0). 30,156.00 METERS

(11) YKN (SP 241) DISTANCE FROM EQUATOR TO SOUTH EDGE OF SHEET. 3,955,754.464 METERS

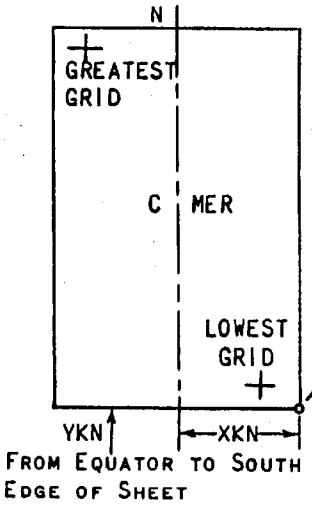
(12) CENTRAL MERIDIAN 75 ° 20 ' 00 "

(13) SURVEY SCALE 1: 40,000

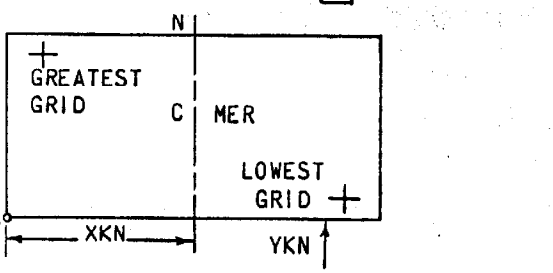
(14) SIZE OF SHEET (CHECK ONE) 36x54 ☐ 42x60 ☐ OTHER 36X60 [X]

(15) NYX, ORIENTATION OF SHEET (CHECK ONE)

NYX = 1 ☐



NYX = 0 [XX]



(9) PLOTTER ORIGIN (CORNER OF SHEET)

LATITUDE 35 ° ~~44~~ 41 ' 50 "
LONGITUDE 75 ° ~~40~~ 39 ' 00 "

GRID LIMITS

LIST G.P. OF ALL STATIONS TO BE PLOTTED ON THIS PROJECTION ON THE BACK OF THIS FORM. (DEG., MIN., SEC.)

(16) GREATEST LATITUDE 36 ° 00' 00" (PROJECTION LINE
(17) LOWEST LATITUDE 35 ° 44' 00" INTERVAL, PAGE 4
(18) DIFFERENCE ° 16' 00" HYDRO MANUAL)

(19) 2 '00 "
(20) 8 YSN

(21) GREATEST LONGITUDE 75 ° 40' 00"
(22) LOWEST LONGITUDE 75 ° 02' 00"
(23) DIFFERENCE ° 38' 00"

(24) 2 ' 00 "
(25) 19 XSN

Boatsheet MI-40-2-70 (H-9155)

Position Data

Julian Day	Date (1970)	Position	Time (From)	to	Position	Time (To)
240	Aug. 28	0001	192000		0059	235600
241	Aug. 29	0060	000000		0228	234400
242	Aug. 30	0229	000700		0338	235600
243	Aug. 31	0339	000000		0533	184000
244	Sep. 1	0534	170700		0566	194530
245	Sep. 2	0567	011800		0855	235600
246	Sep. 3	0856	000000		0901	050700
253	Sep. 10	0902	014900		1105	234400
254	Sep. 11	1106	000800		1382	232800
255	Sep. 12	1383	010800		1658	235800
256	Sep. 13	1659	000000		1969	235600
257	Sep. 14	1970	000000		2261	235600
258	Sep. 15	2262	000000		2509	235500
259	Sep. 16	2510	000000		2711	235500
260	Sep. 17	2712	000000		2740	023100
265	Sep. 22	2741	202130		2768	223500
266	Sep. 23	2769	050700		2906	235500
267	Sep. 24	2907	000000		3155	235500
268	Sep. 25	3156	000000		3378	235600

Julian Day	Date (1970)	Position	Time (From)	to	Position	Time (To)
269	Sep. 26	3379	000000		3618	235600
270	Sep. 27	3619	000000		3911	235600
271	Sep. 28	3912	000000		4065	112900
272	Sep. 29	4066	224600		4083	235600
273	Sep. 30	4084	000000		4325	235600
274	Oct. 1	4326	000000		4363	023100
279	Oct. 6	4364	231300		*4378	235930
280	Oct. 7	*4378	000000		4615	235800
281	Oct. 8	4616	000000		4871	235700
282	Oct. 9	4872	000000		5134	235630
283	Oct. 10	5135	000000		5237	104700

The following position numbers were not used in this survey. The recorded data was eventually rejected.

0279 to 0280
0367 to 0381
1161
1439 to 1440
2855 to 2858
3196 to 3201

Position Number 4378 was duplicated.

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

TIDE NOTE FOR HYDROGRAPHIC SHEET 3/2/73

Processing Division: Atlantic Marine Center

Hourly heights are approved for

Tide Station Used (NOAA form 77-12): Hampton Roads, Va.

Period: July 19-Nov 12, 1970

HYDROGRAPHIC SHEET: H-9171, H-9155, H-9137

OPR: 438

Locality: Coast of North Carolina

Plane of reference (mean ~~lower~~ low water): 3.9 ft.

Height of Mean High Water above Plane of Reference is 2.5 ft.

Remarks: Zoning: Apply time and height corrections recommended in project instructions to Hampton Roads hourly heights.

Robert A. Cummings
Chief, Tides Branch

FIELD PARTY TIDE NOTE

OPR-438 North Carolina Marine Charting

The control station for the project was the standard tide gage at Hampton Roads (Sewells Point), Virginia, Latitude 36°57' N. Longitude 76° 20' W. This station operates on 75° West (+5) time, and the height datum is 3.9 feet below Mean Low Water.

Hourly heights for this project were furnished by the Washington office and were logged on data tapes with printouts. These tapes and printouts were forwarded to Atlantic Marine Center. Attn: CFN3, for final compilation of tide data in accordance with CFN3 memorandum File Number D-2-3-2, Serial Number 70-32 (copy of the memorandum included in this report).

The following corrections to the hourly heights were furnished by Washington in order to zone the boatsheets:

Zone	Time Diff.	Range Ratio
Latitude 34°00'-36°00'	-2 Hours	1.4
Latitude 35°00'-37°00'	-1½ Hours	1.4

The ship MT MITCHELL operated on local 60° West (+4) time from the start of hydrography on July 19, 1970 until October 30, 1970. The ship's time was then changed to conform with 75° West (+5) time zone.

Submitted by:

Gregory R. Bass

Gregory R. Bass
ENS, NOAA

NOAA FORM 76-155
(11-72)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

SURVEY NUMBER

H-9155

GEOGRAPHIC NAMES

Name on Survey	A ON CHART NO.	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
ATLANTIC OCEAN										1
PLATT SHOALS										2
										3
										4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
					Approved by:					19
					Chas. E. Harrington					20
					Staff Geographer					21
					Feb. 27, 1974					22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

☆ U.S. G.P.O. 1972-769-565/516 REG.#6

FORM C&GS-946
(REV. 11-65)
(PRESC. BY
HYDROGRAPHIC
MANUAL 20-2,
6-94, 7-131)

U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
COAST AND GEODETIC SURVEY
NAUTICAL CHART DIVISION

HYDROGRAPHIC SURVEY STATISTICS

HYDROGRAPHIC SURVEY NO. H-9155

RECORDS ACCOMPANYING SURVEY: To be completed when survey is registered.

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET & PNO	1	BOAT SHEETS (2 Parts)	1
DESCRIPTIVE REPORT	1	OVERLAYS	X 5

DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES	X		5			2
CAHIERS	2					
VOLUMES						2
BOXES			6			

T-SHEET PRINTS (List)
NA

SPECIAL REPORTS (List)
Hi-Fix & Velocity correction Reports

OFFICE PROCESSING ACTIVITIES

The following statistics will be submitted with the cartographer's report on the survey

PROCESSING ACTIVITY	AMOUNTS			
	PRE-VERIFICATION	VERIFICATION	REVIEW	TOTALS
POSITIONS ON SHEET				5190
POSITIONS CHECKED		475		
POSITIONS REVISED		50		
DEPTH SOUNDINGS REVISED		1000		
DEPTH SOUNDINGS ERRONEOUSLY SPACED		300		
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED				
	TIME (MANHOURS)			
TOPOGRAPHIC DETAILS		0	0	
JUNCTIONS		24	20	
VERIFICATION OF SOUNDINGS FROM GRAPHIC RECORDS	40	90	24	
SPECIAL ADJUSTMENTS card punch-tides, etc.		20		
ALL OTHER WORK		295	89	
TOTALS	40	429	133	

	BEGINNING DATE	ENDING DATE
PRE-VERIFICATION BY B.J. Stephenson & W.L. Jonns		
VERIFICATION BY R.G. Roberson	12-26-72	10-10-73
REVIEW BY [illegible signature] 135 hrs; D.R. Engle; Cursory Insp. K.W. Wellman 47 hrs. 10 hrs.	2-1-78; 8-10-78	3-15-78; 7-17-78

ATLANTIC MARINE CENTER
APPROVAL SHEET
FOR
AUTOMATED SURVEY H- 9155

A. All revisions and additions made on the smooth sheet during verification have been entered in the magnetic tape records for this survey. A new final position printout has/~~has not~~ been made. A new final sounding printout has/~~has not~~ been made.

Date: Oct. 18, 1973

Signed: Lloyd L. Piffer (for) W.L. Jonns

Title: Chief, Verification Branch

B. The verified smooth sheet has been inspected, is complete, and meets the requirements of the Hydrographic and AMC Manuals. Exceptions are listed in the verifier's report.

Date: Oct. 18, 1973

Signed: C. Dale North, JR.

Title: Chief, Processing Division

REGISTRY NO. _____

The Computer and Excess Sounding Cards for this survey have not been corrected to reflect the changes made to the Computer Card and Excess Card Printouts at this time of the review.

When the cards have been updated to reflect the final results of the survey, the following shall be completed:

CARDS CORRECTED

DATE_____ TIME REQUIRED_____ INITIALS_____

REMARKS:

REGISTRY NO. H-9155

The magnetic tape containing the data for this survey has not been corrected to reflect the changes made during evaluation and review.

When the magnetic tape has been updated to reflect the final results of the survey, the following shall be completed:

MAGNETIC TAPE CORRECTED

DATE_____ TIME REQUIRED_____ INITIALS_____

REMARKS:

OFFICE OF MARINE SURVEYS AND MAPS

MARINE SURVEYS DIVISION

MODIFIED HYDROGRAPHIC SURVEY REVIEW

REGISTRY NO. H-9155 FIELD NO. MI-40-20-70

North Carolina, Atlantic Ocean, Oregon Inlet - Kill Devil Hills

SURVEYED: August 28 - October 10, 1970

SCALE: 1:40,000 PROJECT NO.: OPR-438

SOUNDINGS: Echo Sounder DE-723 B CONTROL: Hi-Fix (Range-Range)

Chief of Party	E. K. McCaffrey
Surveyed by	T. E. Gerish, T. Gryniewicz
	A. L. Sikes, S. McGee
	S. C. Schwartz, G. R. Bass
	G. M. Adair, G. L. Sundin
Automated Plot by	CALCOMP - AMC
Verified by	R. G. Roberson
Reviewed by	L. Quinlan
	Date: March 8, 1978
Cursory inspection made--survey processing considered complete	K. W. Wellman July 17, 1978

1. Control and Shoreline

The origin of the control is adequately covered in paragraph F of the Descriptive Report.

There is no shoreline within the limits of the survey area.

2. Hydrography

a. Depths at crossings are, in general, in good agreement. Minor differences of 1 to 3 feet are attributed to sea conditions and irregularities on the bottom not readily shown at the present survey scale.

b. The usual depth curves are adequately delineated. A few brown curves and the supplemental 36-foot depth curve were added to delineate the bottom configuration better in selected areas.

c. The dense development of the bottom configuration and investigations of least depths are considered adequate.

3. Condition of Survey

The sounding records, automated plotting, and Descriptive Report are complete and conform to the requirements of the Hydrographic Manual supplemented by the Instruction Manual - Automated Hydrographic Surveys. It is noted, however, that the junctional depth curves were not accurately reconciled during verification. It was therefore necessary to reexamine and revise selected depth curves during review to effect adequate junctions.

4. Junctions

Scattered depth differences of ± 1 to 3 feet are noted in the junctional areas. Such differences are attributed to sea conditions and shifting sand on the bottom. Considering the disturbed nature of the bottom and the relatively small scales, as well as scale differences, of the adjoining surveys; i.e., 1:40,000-1:80,000; such differences are considered to be within acceptable limits of agreement. Accordingly, adequate junctions have been effected with H-9171 (1970) on the north, H-9243 (1971) on the north and east, and H-9231 (1971) on the east. Junctional survey H-9137 (1970) on the south is not presently available; i.e., cannot be located. The adequacy of its junction with the present survey will be considered during the course of its review. The adequacy of the junction between the present survey and H-9525 (1976) on the west is discussed in the Quality Control Report for H-9525 and requires no further consideration.

5. Comparison with Prior Surveys

a.

H-237	(1849-50)	1:400,000	
H-674	(1859)	1:200,000	
H-767	(1860)	1:500,000	TRACKLINE
H-1500a	(1881)	1:600,000	
H-3000	(1909)	1:20,000	
H-3047	(1909-10)	1:80,000	
H-3047b	(1911)	1:80,000	

These small-scale surveys lack sufficient reliable information for a comparison of any cartographic value. They fall in the area of the present survey but are not discussed in the present review.

b.

H-1721	(1886)	1:200,000
H-1053	(1870)	1:40,000

These surveys cover portions of the present survey area. Comparisons between the present and prior surveys reveal depth differences of ± 15 feet. The noted differences are attributed to shifting bottom sediments and to the less detailed and less accurate methods employed on the prior

surveys. The more completely developed present survey is adequate to supersede the prior surveys within the common area.

c. F.E. No. 16 (1957) W.D. 1:40,000

A comparison between the present survey and the various cleared wire-dragged areas reveals no conflicts between present survey depths and cleared depths on F.E. No. 16 W.D. Least depths on four groundings were carried forward to supplement the present survey.

A comparison between the present survey and the hydrographic development on sheet 6 of the F.E. reveals present depths varying from +3 feet to -14 feet intermingled with areas of good general agreement. The noted depth differences are attributed to natural causes. The hydrographic development on sheet 6 of F.E. 16 is superseded by the present survey within the common area.

6. Comparison with Chart 12200 (1109) 29th Edition, April 9, 1977
12204 (1229) 22nd Edition, February 26, 1977

a. Hydrography

The charted hydrography originates with the previously discussed prior surveys which require no further consideration, supplemented by the verified smooth sheet of the present survey and miscellaneous chart letters.

The source(s) of several soundings could not be readily ascertained. These soundings do not provide information significant to navigation and are adequately superseded by present depths.

The Obstruction Fish Haven charted in the vicinity of latitude 35°44.60', longitude 75°27.30' originates with CL 834/74 subsequent to the date of the present survey and should be retained on the chart.

Except as noted above, the present survey is adequate to supersede the charted hydrography within the common area.

b. Aids to Navigation

The floating aid to navigation within the survey area is in agreement with its charted position and adequately marks the intended feature.

7. Compliance with Instructions

This survey adequately complies with the project instructions.

8. Additional Field Work

This is an excellent basic survey and no additional field work is recommended.

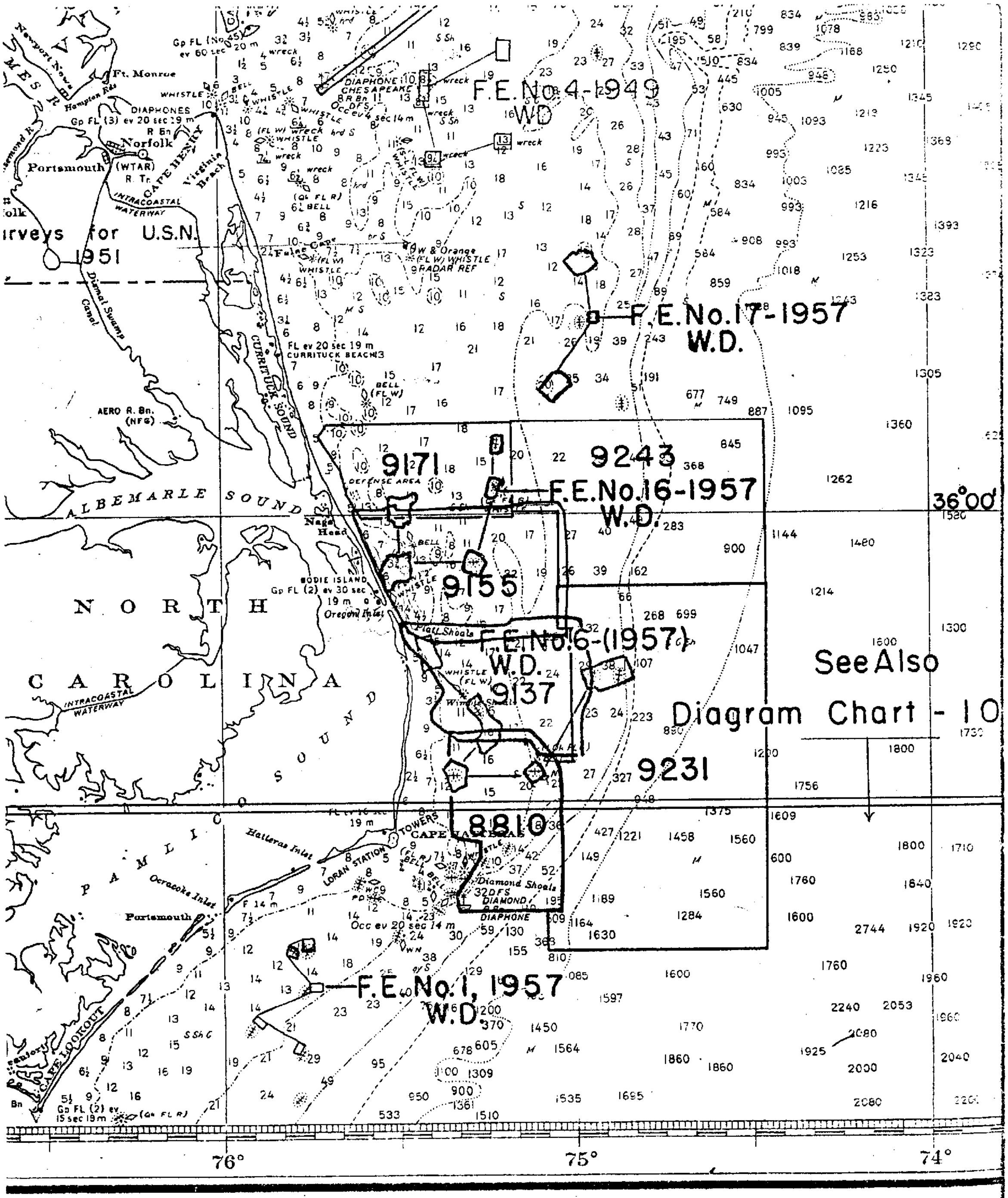
Examined and Approved:

R H Carstens

for Chief
Marine Surveys Division

R H Houston

Associate Director
Office of Marine Surveys
and Maps



F.E.No.4-1949
W.D.
F.E.No.17-1957
W.D.
F.E.No.16-1957
W.D.
F.E.No.6-(1957)
W.D.
F.E.No.1, 1957
W.D.
9171
9243
9155
9137
9231
8810
Surveys for U.S.N.
1951
See Also
Diagram Chart - 10
36°00'
NORTH
CAROLINA
ALBEMARLE SOUND
PAMLICO SOUND
CURRITUCK SOUND
INTRACOASTAL WATERWAY
Norfolk
Portsmouth
Ft. Monroe
Hampton Rds
CAPE HENRY
Virginia Beach
Nags Head
Oregon Inlet
Hatteras Inlet
Ocracoke Inlet
CAPE HATTERAS
Diamond Shoals
CAPE LOOKOUT
76°
75°
74°

Chart - 1000

(3-25-63) NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9155

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.
1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
1109	1/24/74	B. Feeney-Downs	~~Full~~ Part ~~Before~~ After Verification Review Inspection Signed Via
129-SC	2-19-74	H. Larson	Drawing No. Appld critical corr only
			Exm'd - No critical corr
1229	2-21-74	H. Larson	~~Full~~ Part ~~Before~~ After Verification Review Inspection Signed Via
			Drawing No. 34 — applied critical corr only
1000	9-24-74	Joseph J. Scirone	~~Full~~ Part ~~Before~~ After Verification Review Inspection Signed Via
			Drawing No. Applied critical corr only
129-SC	10-25-78	Richard L. Hayes	Full ~~Part Before~~ After Verification Review Inspection Signed Via
12205			Drawing No. 13
12204	11-1-78	Richard L. Hayes	~~Full~~ Part ~~Before~~ After Verification Review Inspection Signed Via
(1229)			Drawing No. 39 - X
			CRIT. CORR
12204	6-19-79	B. H. Wanless	Full ~~Part Before~~ After Verification Review Inspection Signed Via
(1229)			Drawing No. 40
12200	8/17/79	B. H. Wanless	Full ~~Part Before~~ After Verification Review Inspection Signed Via
1109			Drawing No. 45
13003	7/23/80	Barbara Loeb	Full ~~Part Before~~ After Verification Review Inspection Signed Via
(1000)			Drawing No. #57 Applied thru reduction of cht. 12200 #45
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.

FORM C&GS-8352 SUPERSEDES ALL EDITIONS OF FORM C&GS-975. USCOMM-DC 8588-P63